# Vector-Borne Disease

## Weekly Surveillance Report

Center for Acute Disease Epidemiology | Acute Disease Prevention and Emergency Response & EH | West Nile Virus Website

All data presented in this report are provisional and may change as additional reports are received

**Date Issued: October 26, 2018**

## West Nile Virus (WNV)

WNV is endemic in Iowa and activity usually peaks in late summer and early fall. IDPH works in collaboration with Local Public Health (LPH) and other appropriate partners to investigate all reported cases.

In 2018, Iowa has been experiencing an increase in WNV activity. To date, 95 cases have been identified and additional cases are under investigation. This is the highest number since 2003.

Five WNV-related deaths and eight presumptive viremic blood donors have also been identified. Thirteen horses and 102 mosquito samples have tested positive for WNV [Table 1].

**Table 1. Human/Equine/Mosquito Surveillance, 2018 Positive Samples**

| | | | | Mosquitoes | | | | |
|---|---|---|---|---|---|---|---|---|
| **County** | **Human** | **Blood Donor** | **Horse** | ***Culex pipiens*** | ***Culex pipiens* group** | ***Culex restuans*** | ***Culex tarsalis*** | ***Culex territans*** |
| Adams | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Audubon | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Black Hawk | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 |
| Boone | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bremer | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Buchanan | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Butler | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Calhoun | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chickasaw | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clarke | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clay | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Clinton | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Des Moines | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dubuque | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Emmet | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fayette | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Floyd | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Franklin | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Harrison | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Henry | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Howard | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Humboldt | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ida | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jasper | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Johnson | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kossuth | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lyon | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mahaska | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Marion | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Marshall | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Mills | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mitchell | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Monona | 1 | 0 | 0 | 4 | 2 | 0 | 0 | 0 |
| Monroe | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Montgomery | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Page | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Palo Alto | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Plymouth | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Polk | 11 | 0 | 3 | 26 | 20 | 31 | 0 | 1 |
| Pottawattamie | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Poweshiek | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Sac | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Scott | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shelby | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sioux | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Story | 3 | 1 | 0 | 2 | 2 | 1 | 0 | 0 |
| Van Buren | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wapello | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Warren | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Washington | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wayne | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Woodbury | 8 | 1 | 0 | 1 | 4 | 1 | 0 | 0 |
| **Total** | **95** | **8** | **13** | **34** | **33** | **33** | **1** | **1** |

**Figure 1. 2018 West Nile virus case count and incidence rate by county of residence.**

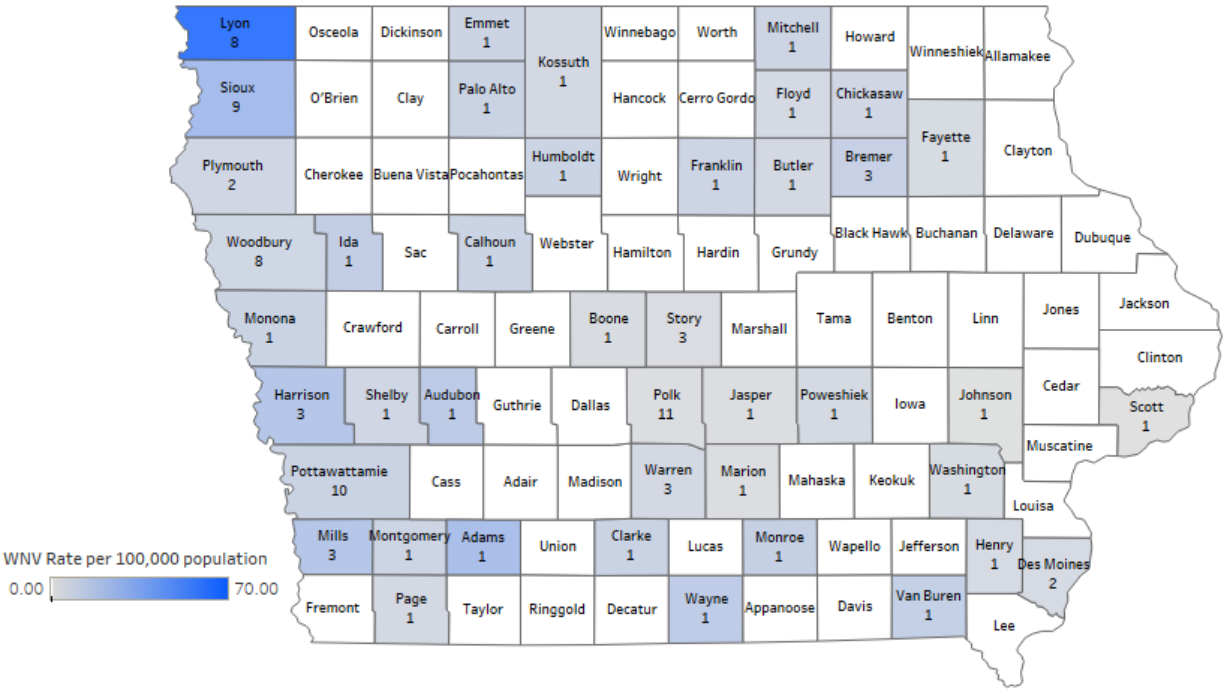
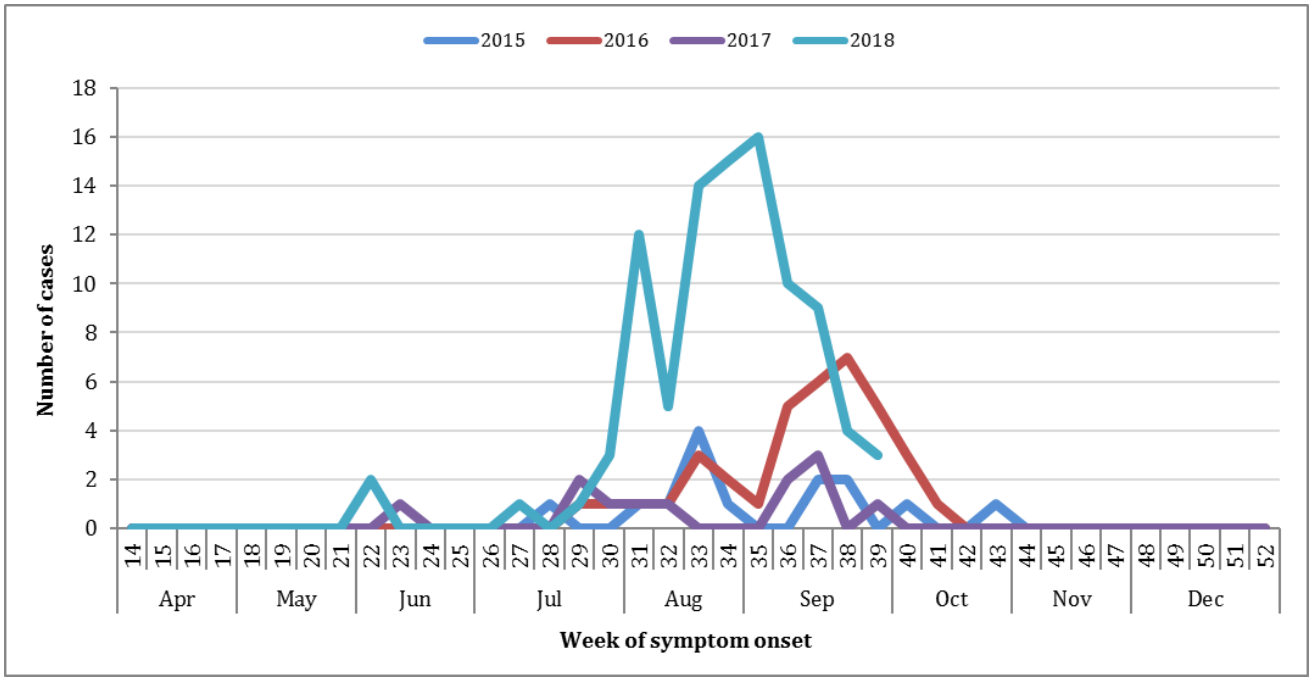



**Figure 2. WNV disease cases reported to IDPH, by week of onset-Iowa, 2018**




For additional information on Iowa West Nile virus activity, visit http://idph.iowa.gov/cade/disease-information/west-nile-virus.

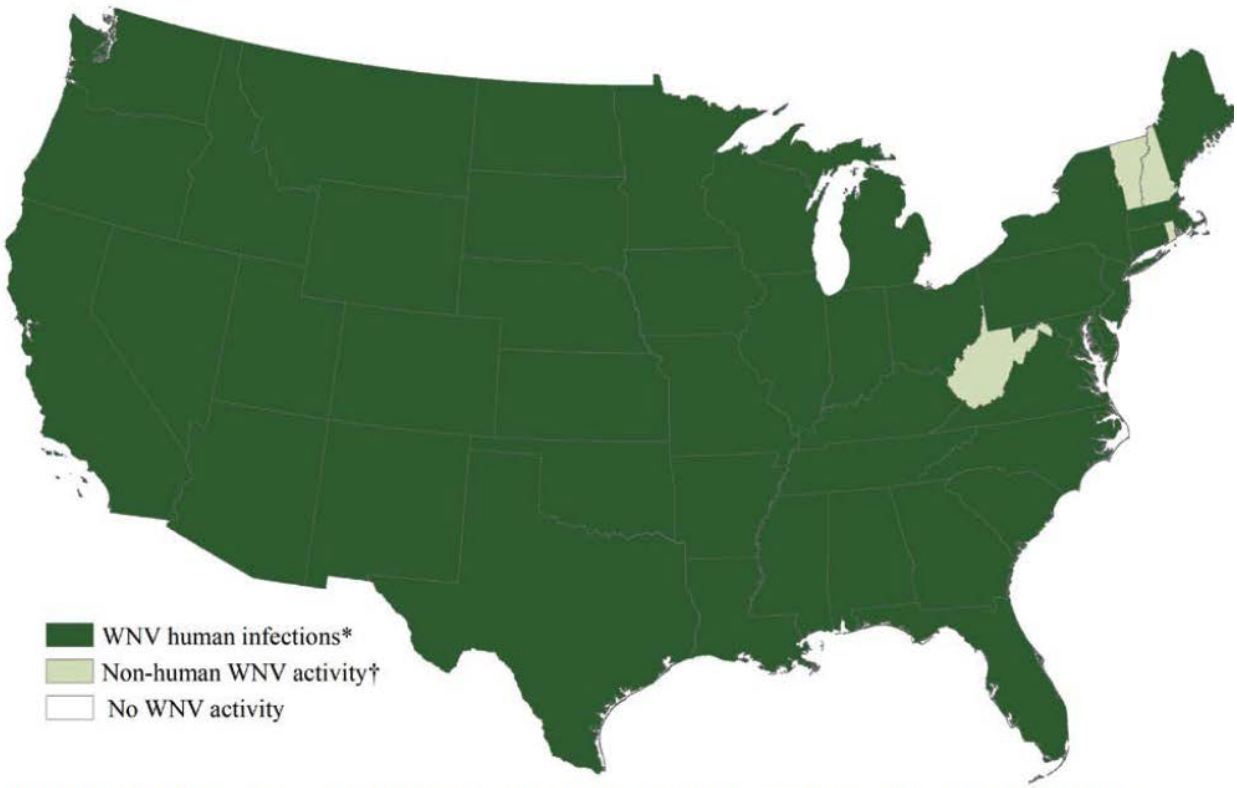
**National WNV Activity:**

As of October 16th, 1,142 counties from 49 states and the District of Columbia have reported WNV activity to ArboNET for 2018, including 45 states and the District of Columbia with reported WNV human infections (i.e., disease cases or viremic blood donors) and four additional states with reported WNV activity in non-human species only (i.e., veterinary cases, mosquito pools, dead birds, or sentinel animals) [Figure 3].

To date, 1,976 human WNV disease cases have been reported from 624 counties in 45 states and the District of Columbia. Of the 1,976 reported cases, 1,176 (60%) were classified as neuroinvasive disease (e.g., meningitis or encephalitis) and 800 (40%) were classified as non-neuroinvasive disease [Figure 4]. Dates of illness onset for cases ranged from January-October [Figure 5].

Overall, 270 WNV PVDs have been reported from 32 states.

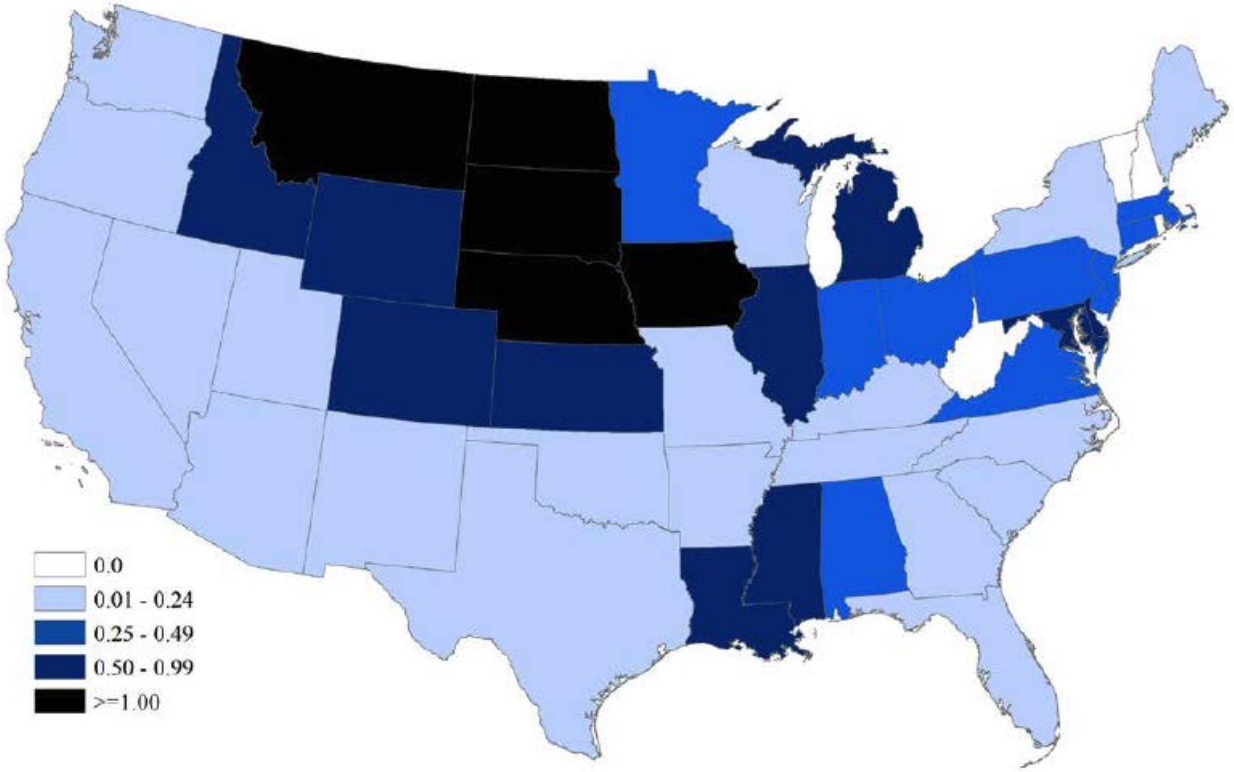
**Figure 3. WNV activity reported to ArboNET, by state – United States, 2018 (as of October 16, 2018)**




*WNV human disease cases or presumptive viremic blood donors. Presumptive viremic blood donors have a positive screening test which has not necessarily been confirmed.

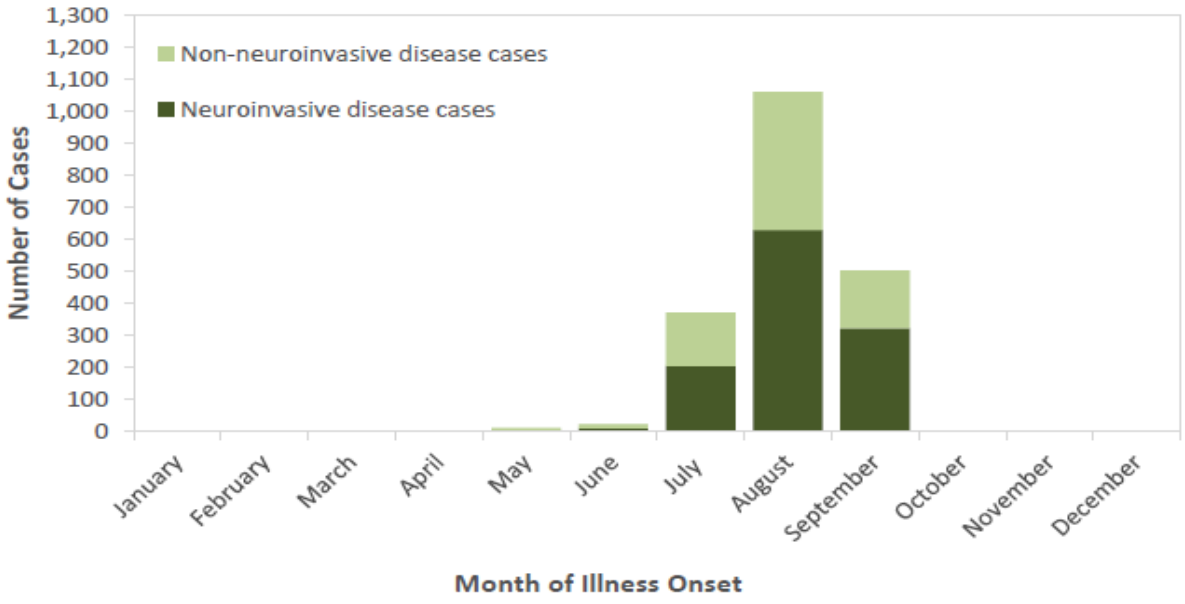
†WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

**Figure 4. WNV neuroinvasive disease incidence* reported to ArboNET, by state – United States, 2018 (as of October 16, 2018)**




*Incidence per 100,000 population

**Figure 5. WNV disease cases reported to ArboNET, by month of onset– United States, 2018 (as of October 16, 2018)**




*Cases missing onset date (n=3)

## Mosquito Surveillance

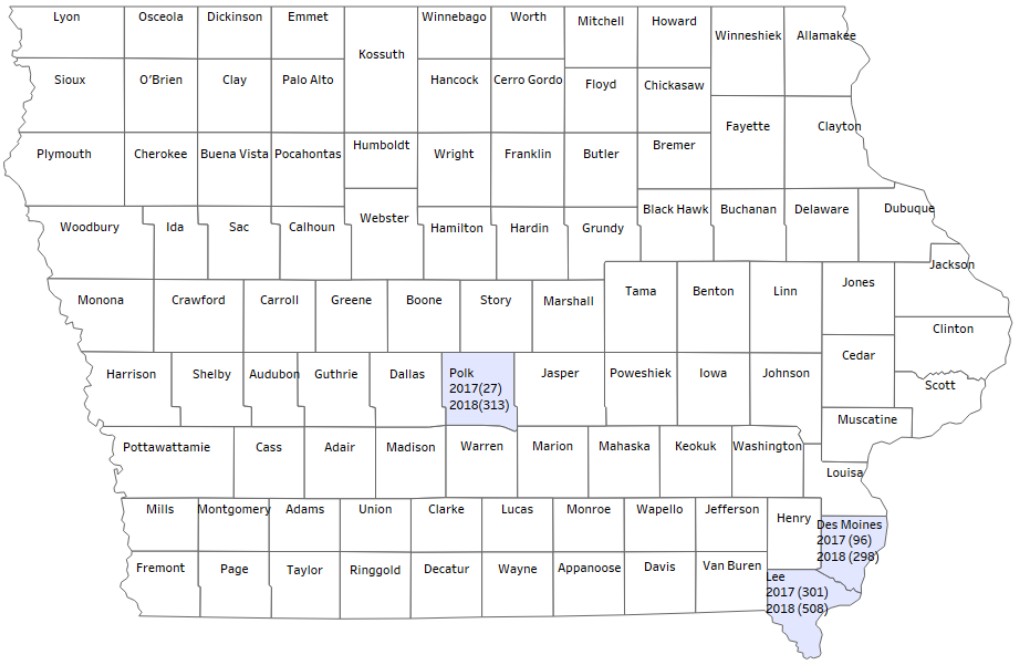
IDPH in collaboration with the State Hygienic Laboratory (SHL), Iowa State University (ISU), and local public environmental health partners conducts ecological surveillance in 17 counties across the state by monitoring mosquitoes and testing for WNV infected populations.

**Table 2. 2018 mosquitoes tested for West Nile virus**

| Species | # of Samples Tested | WNV Negative | WNV Positive |
|---|---|---|---|
| ***Cx. pipiens*** | 330 | 296 | 34 |
| ***Cx. pipiens* group** | 324 | 291 | 33 |
| ***Cx. tarsalis*** | 94 | 93 | 1 |
| ***Cx. restuans*** | 580 | 547 | 33 |
| ***Cx. territans*** | 40 | 39 | 1 |
| ***Cx. erraticus*** | 0 | 0 | 0 |
| ***Cx. salinarius*** | 50 | 50 | 0 |
| ***Ae. japonicus*** | 0 | 0 | 0 |
| ***An. punctipennis*** | 0 | 0 | 0 |
| ***Ae. atropalpus*** | 0 | 0 | 0 |
| ***Ae. sticticus*** | 0 | 0 | 0 |
| ***Ae. triseriatus*** | 1 | 1 | 0 |
| **Total** | **1419** | **1317** | **102** |

In addition to viral testing for WNV, the population of mosquitoes in Iowa is monitored through trapping activities. All trapped mosquitoes are sorted by species. The figure [Figure 6] below shows where and when *Aedes albopictus* mosquitoes were detected in 2017 and 2018.

**Figure 6. *Aedes albopictus* identified in Iowa, 2017-2018**



## Malaria

Malaria is a serious and sometimes fatal disease caused by a parasite that commonly infects *Anopheles* mosquitoes. Malaria is spread to humans by the bite of the infected female mosquito. Only *Anopheles* mosquitoes can transmit malaria and they must have been infected through a previous blood meal taken from an infected person.

Twenty-one cases of malaria have been reported in Iowa. Cases are in travelers and immigrants returning from parts of the world where malaria transmission occurs. In 2017, 19 cases of malaria were reported to IDPH.

## Rocky Mountain spotted fever (RMSF)

American dog ticks are carriers of *Rickettsia rickettsii*, the bacteria that causes RMSF. The American dog tick is the most common species of tick in Iowa and can be found in every county in the state. The tick is most active late March through August.

Twenty-two cases of RMSF have been reported in Iowa. In 2017, 17 cases of RMSF were reported to IDPH.

## Ehrlichiosis/Anaplasmosis

There are at least three species of bacteria responsible for ehrlichiosis/anaplasmosis in the United States: *Ehrlichia chaffeensis, Ehrlichia ewingii, and Anaplasma phagocytophilum*. Ehrlichiae are transmitted by the bite of an infected lone star tick (*Amblyomma americanum*) which is found in Iowa. *A. phagocytophilum* is transmitted by the bite of an infected blacklegged tick (or deer tick, *Ixodes scapularis*) in Iowa. The clinical signs and symptoms of these infections are similar.

Twenty-two cases of ehrlichiosis/anaplasmosis have been reported in Iowa. In 2017, 24 cases of ehrlichiosis/anaplasmosis were reported to IDPH.

## Lyme

Lyme disease is caused by *Borrelia burgdorferi* and in Iowa is transmitted to humans by the bite of an infected tick, the blacklegged tick (or deer tick, *Ixodes scapularis*). Ticks are most likely to spread the Lyme disease bacterium during their pre-adult stage (nymph). They are most common between May and July and found in tall grasses and brush of wooded areas.

As of October 26th, 249 confirmed and probable cases of Lyme disease have been reported in Iowa [Figure 7]. In 2017, 255 cases of Lyme disease were reported to IDPH.

**Figure 7. 2018 Lyme disease case count and incidence rate by county of residence.**